Energy and Epigenetics 8: Quantum Autism

Readers Summary

1. Does physics hold the key to biology?
2. What is the epigenetic trigger?
3. How do transition metals play a starring role in all of this?
4. How does the MHC 1 gene tie autism to immunity?
5. Do light, EMF and all subatomic particles carry energy and information to us?

Thirty years ago, autism affected 1 in 500 children. In recent years, scientists have made extraordinary advances in understanding the causes of autism. Autism now is estimated to afflict 1 in 88 children in the USA. In certain parts of the USA, it is found in 1 in 44 births. But remarkably little of this understanding has percolated into popular awareness, which often remains fixated on vaccination linkage to the disease. So here's the short of it: **A large subset of autism spectrum disorders are linked to many types of inflammatory diseases found in the parents before the child is even born**. Moreover, it looks like the disease may begin in the germ lines of the parents or in the womb very early on. This makes it a transgenerational epigenetic disease and not a genetic one. There are no mutations in the DNA code to account for with this disease.

Autism begins with neuro-immune dysregulation. In the last blog, I introduced you to the MHC 1 gene. Today, you will begin to see how our modern environment interacts with this gene to change its molecular structure, electronically, on a molecular basis and on a subatomic basis to explain to you how non-native EMF has the ability to quantumly alter its genetic

expression to cause a disease. Ideally, our immune system should operate like an enlightened comic book hero, wiping out inflammation with precision and accuracy and with deadly force when necessary, but then quickly returning to a Zen-like calm. Doing so requires an optimal balance of pro- and anti-inflammatory action that is also controlled by subatomic changes in molecules that control the process.

In autistic individuals, the immune system fails at this balancing act. Inflammatory signals and stress dominate in the hippocampus and in the hindbrain. Anti-inflammatory feed back loops become inadequate. A state of chronic stress activation prevails in these people. Moreover, the more skewed their conditions swing toward inflammation, the more acute the autistic spectrum becomes as measured in the symptoms the person expresses.

Nowhere are the consequences of this dysregulation more evident than in the immature autistic brain. Spidery cells that help maintain neurons are called astroglia and microglia. In autism, and many neurodegenerative disorders, they become enlarged from this chronic activation. Pro-inflammatory signaling like Nf kappa beta, TNF alpha, IL-1 and IL-6 molecules abound in the cerebrospinal fluid of all these diseases. It appears many genes and their products that are intimately involved in inflammation are switched “on” in these diseases.

Why is that? What in the modern environment might do that to microglia cells?

Physics Dictates the Biologic Response

In the EMF series and quantum biology series and this current energy and epigenetics series, I have shown you persistently and consistently how non-native EMF is now present in the

human environment in great excess. I have not yet showed you how this type of electromagnetic radiation can directly affect epigenetic expression to cause many neolithic diseases. Today, I will begin to show you how physics of transition metals interacts with biologic proteins to alter their function in a quantized fashion. It is non-native EMF that causes this problem of the immature neuro-immune system in the human fetus.

What is a Neuro-Immune Disorder?

- Extremely large and growing group of disorders typically defined by their symptoms
- Affects both the nervous & immune system due to the linkage of the MHC 1 gene you learned about in EE 7.
- Affects people of all ages and up to 30 percent of population
- 2 major groups of severe modern disability: Autism and Alzheimer's
- Everybody knows somebody with these issues today.

Disorders Commonly Found in Children

- Autism, ADD, ADHD, PDD, Asperger's, Learning Disorders
- Asthma and Severe Allergies (foods, inhalants, chemicals)
- Seizures, Migraines, Hearing Loss, Oculomotor abnormalities

Disorders Commonly Found in Adults

- Migraines, Headache, Vertigo, Dizziness, Chronic Fatigue
- Fibromyalgia, Chronic Pain, Neuralgias, Neuropathies
- Vertigo, Meniere's, Acute Hearing Loss,
- Adult ADD, Anxiety Disorders, Depression, Bipolar
- Auto Immune Disorders (i.e. lupus, rheumatoid, etc.), ALS

Disorders Commonly Found in the Elderly

- Alzheimer’s and Dementias, like Parkinson’s disease
- Multiple Sclerosis, Lou Gehrig’s, Guillen-Barre

Moreover, non-native EMF can decrease the amount of microglial cells in the central nervous system in many anatomic locations, and this can decreases the amount of different population of cells that eventually become activated to perform certain neurologic tasks. This process is called neurogenesis. Neurogenesis requires proper immune system activation through the MHC 1 gene. It is tied to the formation of the DC current formed in the brain as a fetus develops into a child and then to an adult. Myelinogenesis is not complete until 25-27 years old. It can also be delayed or permanently altered by non-native EMF exposure. In Energy and Epigenetics 7, you learned about the major gene that controls human neocortical neurogenesis: MHC 1. What alters this gene’s epigenetic expression? What is the environmental trigger? Today’s blog is about that trigger.

The Epigenetic Trigger

Better clues to the causes of the autism phenomenon come from parallel “neolithic epidemics” also found today in our modern world. Of neolithic diseases, the prevalence of inflammatory diseases in general has increased significantly in the past 60 years. As a group, they include asthma, now estimated to affect 1 in 10 children. This is now at least double what the prevalence was in 1980. What else? Autoimmune disorders, which now afflict 1 in 20. In some parts of the world, like Australia or southern California, the numbers show stepper risks for autoimmunity and cancer. Remember what I wrote for you in EMF 2? **Pandemics or epidemics are not caused by genetics in medicine; they are caused by alteration in epigenetic mechanisms.** Epigenetic modification is due to an altered environment for some reason.

These findings are important for many reasons, but perhaps the most noteworthy is that they provide evidence of an abnormal, continuing biological process in our species that has persisted for some reason. That means that we might have finally have a therapeutic target for autism. Autism is a disorder defined by behavioral criteria like social impairments, difficulty communicating and repetitive behaviors.

But how do we address it, and where do we begin?

That question has led scientists to the womb because most autistic children come into to the world already abnormal. This implicates the parents' germ cell lines or it implicates epigenetic expression of fetal DNA during neurogenesis. Interestingly, a population-wide study from Denmark spanning two decades of births indicates that infection during pregnancy increases the risk of autism in the child. Hospitalization for a viral infection, like the flu, during the first trimester of pregnancy triples the odds of getting autism. Bacterial infection, including of the urinary tract, during the second trimester increases chances by 40 percent.

The lesson for us to learn here isn't necessarily that viruses and bacteria directly damage the fetal neocortex. Rather, **the mother's attempt to repel invaders, her inflammatory response to the insult, seems to be at fault.** Research by Paul Patterson, an expert in neuro-immunity at Caltech, demonstrates this important principle. When we inflaming pregnant mice artificially, without any living infective agent, it prompts behavioral problems in the young mice offspring. In this simplistic model, autism results from collateral damage of neuro-immune activation. It's an unintended consequence of self-defense during pregnancy. Shatz's work in MHC1 on immune system development and neurogenesis are where the rubber meets the road for this disease. She is the researcher I mentioned in EE 7 who discovered that MHC 1 links immunity to neurogenesis in

humans.

Yet, to blame infections alone for the autism epidemic is scientific folly. First, in the broadest sense, the epidemiology doesn't match our observations since the 1940's. Leo Kanner first described infantile autism in 1943. Diagnoses have increased tenfold since then, although a careful assessment suggests that the true increase in incidences is less than half that. Yet, during that same period, **viral and bacterial infections have generally declined in our species**. This is a very important observation, especially by the people and parents affected by this disease who have ignored them. By many measures we have in medicine, we're more infection-free than ever before in our human history. In fact, the reason infections and viral illness has radically changed in the 20th century was because of the wide spread use of vaccines for certain infectious diseases.

I have always found it ironic that the autism community has continued to blame vaccines, in spite of this very clear association of a decrease in infectious disease in humans over the same time span. This is a big clue that something other than just a vaccine is the major epigenetic player here. I think vaccines have become the easy target when a family is decimated by this disease and not getting any real answers from medicine. The astute scientists would realize that some key observations would tease out the details.

So, if vaccines decrease the infectious disease risk, and we know it clearly does, what could be the major issue? I looked carefully how vaccines were first created and how modern vaccines have evolved from 1940 until 2013. I found most of our modern vaccines have changed dramatically recently to use **metal alloys** in them in order to activate a proper immune response to limit our infectious disease risk.

It was here I wondered could it be related to the metals in the vaccine, and not the vaccine itself?

It should be interesting to note that the EMF technology boom rose simultaneously as vaccines changed to use these metals. Prior to 1980, only microwaves were commercially available in any significant quantities. The general public rapidly adopted other EMF technologies in laptops and cell phones after 1990. EMF use has grown exponentially every year since 1990 in the Western world. This explosive growth curve fits autism growth rates perfectly.

One thing has become increasingly clear, however, autism spectrum disorders are especially tied to the mother's risks. There is a massive trans-generational epigenetic link being made in the biology literature. One large Danish study, which included nearly 700,000 births over a decade, found that a mother's rheumatoid arthritis, a degenerative disease of the joints, **elevated a child's risk of autism by 80 percent**. Her celiac disease, an inflammatory disease prompted by proteins in wheat and other grains, **increased it 350 percent**. Genetic studies tell a similar tale. It is clear this is an epigenetic and not a genetic disease.

Truth Bomb: Gene variants associated with autoimmune diseases of all kinds are linked to genes of the immune system and seem to also increase the risk of autism, especially when they occur in the mother. This ties them all back to the MHC 1 gene.

In some cases, scientists have seen evidence of a misguided immune response in action of the developing brain. Mothers of autistic children often have unique antibodies that bind to fetal brain proteins.

Huge Epigenetic Clue: Autistic children tend to have mothers with poor immune function who also have **low iron and copper levels**. Iron and copper are both transition metals on the periodic table of elements.

A few years back, scientists at the MIND Institute, a research

center for neuro-developmental disorders at the University of California, Davis, injected these antibodies into pregnant macaques. The control animals got antibodies from mothers of typical children. Animals whose mothers received “autistic” antibodies displayed repetitive behavior common in spectrum disorders. They had trouble socializing with others in the troop. In this model, autism results from an attack on the developing fetus.

These phenomena listed above, and their parallel rise together by humans, clearly linked to the autism epidemiology that is published in the literature since 1980, but the linkage has been murky at best to medicine, because they do not understand how non-native EMF affects transition metals that are used in biologic proteins.

Why Transitional Metals (Copper and Iron) are a Big Clue to the Puzzle

I found the copper and iron link to autism and EMF in one of the more unlikely places in my studies. I found it in the manufacturing of ceramic manufacturing processes and the process of curing asphalt for freeways. The initial link was made because I had read a paper on the epidemiology of autism and how the incidence and prevalence was higher around cities with a lot of freeways. I thought to myself this was an odd environmental trigger. It was here that I found that the native ELF EMF from the Earth core was blocked by petroleum deposits in the ground. This implied that places where there were big oil deposits would be considered geopathic stress zones to the MHC 1 gene.

Asphalts are made with petroleum products and with metal powders that are used to cure the asphalt quickly. The link suddenly began to make sense to me. It was the same relationship the literature was revealing in vaccines data with respect to autism. New processes were being designed to

speed up the cure rates and manufacturing process using these highly conductive metals to reduce costs while getting a better material handling effect. Transition metals are highly conductive because they have a ton of D shell electrons that allow them to share electrons in many molecular configuration states. D shell electrons are easily energized by the photoelectric effect and have many axis that they can be found. This makes these electrons have the ability to form electron clouds and be delocalized. I'll explain later in the blog why this issue is huge in biochemistry.

Asphalt is made with petro chemicals and contains a lot of metal ions that are highly conductive. In fact, modern asphalt now has **carbonyl iron** added to it to get it to heat up quicker to lay faster. You might be shocked to know carbonyl iron is the same type of iron found in iron supplements you might take for iron deficiency.

The added metal powders make the products they are manufacturing by have unique capabilities in products used to build cities. In recent years, microwave processing of metal/alloy powders have gained a considerable potential in the field of material synthesis. Microwave heating is recognized for its various advantages, such as: time and energy saving, very rapid heating rates, considerably reduced processing cycle time and temperature, fine microstructures and improved mechanical properties, better product performance. Microwave material interaction for the materials now all have a bound transition metal charge added to it, to improve its material characteristics. This is why they have been adopted aggressively by industry and are now well established by modern industry standards in 2013.

The interesting thing was for highly conductive materials, like copper and iron metals and their alloys, there was not much information available to interpret the actual mechanism of how microwave heating and radiation actually worked for sintering of metallic materials back in the late 1990s and

early 2000s, when I looked for them.

Cosmology Geeks: This is when I went back to my supernova knowledge of how a star explodes. The core of a dying star becomes an iron/nickel core after it has exhausted all other sources of fuel, and the EMF radiation is simultaneously increased from the star as it dies. This EMF spectrum contains a microwave frequency. In astrophysics, they knew how a star blew up, but they never spoke about the detailed mechanism, either. I did find out that nickel released massive amounts of EMF when it was present in the iron core of a supernova before it blows up. We learned about this in 1997-98 from cosmology. I heard about it from a Dr. Greg Aldering, a Cal Berkeley cosmologist.

When this iron core is created with nickel, the balance between gravity and energy is altered. As transition metals become compressed they begin to emit massive amounts of electromagnetic radiation because many of their D shell electrons become delocalized. **This delocalization is a quantum effect.** Photon energies are quantized and so are electron orbital shells they occupy. This means they are linked precisely to the energy they contain. This emissions of EMF from these delocalized electrons is absorbed by the transition metal ion's D shell electrons to increase their energies massively. This causes the supernova to explode. A supernova explosion releases more ionizing radiation in a few hours than our own current sun will have burned in its first 4 billion years of existence at its current output. We come from the dust expelled in a supernova explosion. This directly links our biochemistry directly back to quantum mechanisms in the explosion.

This amount of energy transfer astounded me. If you fast forward to 22:00 minutes into this youtube video about supernovas, you will see this is factual.

It also told me that non-native EMF on Earth had to have a

massive quantum physical effects on the highly conductive transition metals used in biologic proteins. It was here I began to look at the chemistry of these metals. Here the macrocosm of the universe was showing me what non-native EMF was capable of with their interaction of transition metals. I wanted to see if the macrocosm acted like the microcosm, inside of a living cell The Theory of Relativity scales from cosmologic scales to subatomic scales, and biology is smack dab in the middle of those scales. So I knew there had to be an quantum physical effect somewhere. So I looked back to ceramics and asphalt manufacturing to gain the insight I needed.

Asphalt Manufacturing and Samurai Swords

Microwave sintering of metal powders which have high electrical conductivity is a relatively new area of material science with growing interest because it is so cost efficient as it saves a lot of energy and money. This is why it got popular so fast over the last 15 years. This was first reported in 1999 by Roy and co-workers. These highly conductive transitional metals are partially porous in a powder metal compact, and can could be easily heated and sintered in a microwave field. Anyone who has a microwave knows just what a conductive metal reacts like when you put it in a microwave by mistake.

I also found out these metals were used extensively in the **manufacturing of semiconductors** as well. Most of them use ceramics in the mirror coating. The Maykoh company of Japan has had amazing technology that they brought to the semiconductor industry all the way from the ancient history of making Samurai swords. The Japanese stole the mirror technology from China in the 16^{th} century. Magic mirrors are made with copper, tin and lead, and when highly polished, they

are eventually coated with nickel to make the mirrored surface. The Yamamoto company in Kyoto still makes these mirrors today, using these ancient techniques. It appears the Ancient warriors have used this technology in their metal work to make their swords far stronger than their foes for thousands of years. One of the things they did was to allow the swords to dry and cure the swords during summer time, during high noon, when the photoelectric effect of the sun was strongest. The light at high noon has the strongest amount of photons at this time, at 590 nanometers. It remained a proprietary secret until the tech boom in the 1980s and 1990s. It appears the Japanese knew that photons could alter the chemistry of metals before anyone else did. The photoelectric effect was not yet discovered, but their empiric testing was spot on. Today we know that focused light can turn any substance into a semiconductor and change its physical capabilities.

When I reviewed the literature, I realized back in 1999 these material scientists did not know microwaves could sinter metal powders easily, while giving their products some amazing technical properties. It seemed to surprised the scientists writing these industry papers at the time, in their literature.

In papers written before 1999, it was considered surprising, because the electrically conducting metal materials were supposed to "**reflect microwave radiation" and *not absorb it,* based upon the dogma of the day**. This parallels the current misunderstanding of the non-thermal EMF effects in our biology today, as well. Immediately, I realized if these material scientists did not know about this in 1999, it was clear that no one in biology studied the effect on these metals within a cell, constantly exposed to non-native EMF as well. The big problem was, and still remains today, the disciplines of material science, astrophysics and biochemistry just do not cross-pollinate in life or in the literature. So these

scientists completed works are not well known in biology or organic chemistry, even today.

This is why the link has remained completely unexplored even today. But it does explains why the epidemiology of certain neolithic diseases, like autism, autoimmunity, neuro-degeneration and cancer all seem to link to various metals and mis-formed proteins when they react with certain EMF frequencies and wavelengths. The lower end of the electromagnetic spectrum of energies do not exhibit these physical properties. The EMFs above the lowest end, the microwave range however shows these effects. This means this is a quantum effect that is tied to the energy in the photons or electrons in the EMF.

Later on, other material science researchers have also demonstrated that **all powder metals at room temperature absorb microwaves,** and only bulk metals in sheet of bar shape reflect the microwaves allowing only surface penetration. Biology does not use bulk metal sheets in cells. It uses these metal ions in many critical proteins, that are also porous at a molecular level, like the metal powders used in industry. I also realized that on freeways, cars have to frequently brake at high speeds, and this would create **metal dust** from their brake shoes on freeways. This meant that EMF would be drawn to freeways because these metal powders absorb EMFs based upon their physics. This made sense then why kids with autism were found clustered next to highly traveled freeways in cities in the epidemiologic studies I had read. The link to absorption of EMF was firmly made in my mind. I could finally explain it.

Physics and Chemistry Geeks: Microwave heating of ceramic and other dielectrically lossy materials have been widely investigated and the mechanism of microwave-material interaction is well documented. Microwave penetrates and propagates through dielectric material, such as SiC. This generates an internal electric field (E) within a specific volume, which in turn induces polarization and movement of

charges. The resistance to these induced motions due to internal, electric and frictional forces attenuates the electric field. These losses result in volumetric heating. When this happens to these transition metals in a cell, it acts to dehydrate them of intracellular and interfascial water that surrounds proteins. This water loss limits water energy transfers.

The microwave-metal interaction is quite different in transition metals than that of ceramics. Since transition metals are also good electrical conductors, no internal electrical field is induced in metals. Microwave interaction with metals is restricted to its surface only in bulk form. The depth of penetration in metals, also known as "skin depth," is defined as the distance into the material at which the incident power drops to 1/e (36.8 %) of the surface value. In general, the skin depth is relatively small in metals, since in the microwave frequencies, the particle sizes are much smaller than the wavelength of the microwave radiation used; the EMF field across the particles are uniform and this causes a volumetric heating effect. **However, for relatively coarse particle sizes (>100μm), the heating may be conductive from outside to the interior of the powder**.

The is a HUGE issue in protein biology.

Key Biology Pont the Chemists and Physicists Missed: All transitional metals used in biology's proteins are below this 100 micrometer size. In fact, in bone, Becker found that copper was the doping mechanism used to bind calcium apatite crystals to bone collagen. This helps explain the osteoporosis we are seeing on Earth today. It explains why NASA and the Russians can not solve space osteoporosis. According to the Faraday's effect in a conductive material, a varying magnetic field generates an electric field that gives rise to eddy currents and subsequently resistive losses due to the second law of thermodynamics. Space does not have a varying magnetic field. It is a vacuum.

Electromagnetic radiation with high energy (violet light) but below the ionization threshold of an atom may be absorbed by an orbital electron causing it to “jump” to a higher energy level. This puts the atom in an excited quantum state.

Because of the quantum nature of matter on atomic and molecular scales it has been discovered that **energy can *only* be absorbed at the atomic or molecular level if the *energy* of the incident radiation *exceeds* a specific threshold value. This is why low end ELF EMF’ are the native EMFs that all life responds too.**

At energy levels *below* the threshold level, **no** physical interaction is possible at the atomic or molecular level. This is why these EMFs are safe, and why anything in the microwave range of the electromagnetic spectrum becomes damaging to biologic structures.

Only photons with *exactly* the right amount of energy (neither too little nor too much) can do this. This process results in the formation of absorption lines in the solar spectrum.	

Ionization	
Transparency Master	Photons whose energies exceed the ionization potential of a neutral atom will be absorbed and eject an electron from the atom, leaving the atom in an electrically charged state.The resulting **ion** may become highly chemically reactive.

For us on this planet’s surface, this has major implications. The hydroxyl free radical is the ion that results in this interaction in biology. A metal powder compact or ion cluster in bone or proteins below 100 µm in size will start absorbing more microwave radiation while increasing itself in temperature due to increase in skin depth. **For the last 63 years on the Earth, man has created a varying magnetic field in our resonant cavity because of his use of technology gadgets that all use non-native EMF in the microwave ranges.**

Hydroxyl radicals can occasionally be produced as a byproduct of Immune action. Macrophages and Microglia most frequently generate this compound when exposed to very specific pathogens, such as certain bacteria. The destructive action of Hydroxyl radicals has been implicated in several neurological autoimmune diseases such has HAND when

immune cells become over-activated and toxic to neighboring healthy cells. The hydroxyl radical can damage virtually all types of macromolecules by energizing their molecular structures using the quanta of energy to alter its structure and function: This is true of proteins, carbohydrates, nucleic acids (mutations), lipids (lipid peroxidation) and amino acids coded for by DNA and RNA.

The hydroxyl radical has a very short *in vivo* half-life of approximately 10^{-9} seconds and a high reactivity. This makes it a very dangerous compound to any living organism.

Unlike superoxide, which can be detoxified by superoxide dismutase, the hydroxyl radical **cannot** be eliminated by an enzymatic reaction. Mechanisms for scavenging peroxyl radicals for the protection of cellular structures includes endogenous antioxidants such as melatonin and glutathione.

Here is autism's real epigenetic trigger.

The Biology of Iron and Copper

Iron is an essential mineral in the heme molecule of hemoglobin and the cytochrome proteins in our mitochondria to make energy. Hemoglobin is component of the red blood cell that carries oxygen in the bloodstream. The brain gets 20-23% of the cardiac output of every heart beat. No organ comes close to that consumption. This means the brain needs to have adequate sources of iron to make sure hemoglobin and oxygen are constantly delivered to the brain to maintain performance. Seafood and animal offal are excellent sources of this nutrient as laid out in Brain gut 5 and my Epi-Paleo Rx book. Moreover iron is better absorbed from fish or meat than other sources by the human gut. People who do not eat enough iron can suffer from iron-deficiency anemia. Worldwide, about 1 billion people have iron-deficiency anemia, and about 2 billion people are deficient in zinc (Muller et al., 2005).

Iron also facilitates the conversion or T4 to T3, the active thyroid hormone in the body. This makes it very critical for humans, because when it is not present sufficiently, we see chronic pregnenolone steal syndrome and frank inflammation in the developing brain. Iron is also vital for temperature control in humans as well because of the effect of T3 on human uncoupling protein 3 (UCP's). Now go back and re read the magic in Hormone 101 and Hormones 102 blogs now and realize why it is so important to the brain!

In the USA today 20% of women are iron deficient when MD's check their ferritin levels. Globally, iron deficiency is the major cause of neuro-developmental delay in malnourished children (Pollitt, 1993) Iron is also a co factor in the receptor of two major brain neurotransmitters, **dopamine** and **GABA** and this leads to cognitive decline. Now we can see why many diseases like depression, anxiety, and eating disorders actually are present at much higher levels in the modern world. Transition metals are found in the most important proteins that life needs to work. I hope you are beginning to see why the field of action of EMF's is quite important.

It also helps explain why people with hemochromatosis really die early. They absorb more EMF than they should, because their organs are loaded with transition metals that absorb non-native EMFs. The same thing happens in a star before its life ends.

Iron and copper are essential nutrients, excesses or deficiencies of which cause impaired cellular functions and eventually cell death via autophagy and apoptosis. This is especially common in the CNS and PNS. The metabolic fates of copper and iron are intimately related. Systemic copper deficiency generates cellular iron deficiency, which in humans results in diminished work capacity, reduced intellectual capacity, diminished growth, alterations in bone mineralization, and diminished immune response. Copper is required for the function of over 30 proteins, including

superoxide dismutase (SOD1), ceruloplasmin, lysyl oxidase, cytochrome c oxidase, tyrosinase and dopamine-beta-hydroxylase. Mitochondrial superoxide dismutase is a bigger target. This is the place where an Epi-paleo ketogenic diet acts upon histone deactelyases that alter epigenetic signaling in DNA and RNA expression.

Quantum Expression of Nucleic Acids

People do not understand how food and EMF impacts the epigenetic expression of RNA and DNA. All redox reactions in the body are tied to food sources and to glutathione production in cells. When we are oxidized we use up our stores of glutathione. Excessive inflammation does not allows us to replenish its levels. All these coupled metabolic pathways use proteins that use transition metals as catalysts.

Transition metals and their compounds are good biochemical catalysts. A catalyst provides an alternative reaction pathway which serves as a means to lower the activation energy, which is permanently involved in the reaction. Any catalyst that lowers the energy of activation makes it easier to satisfy the second law of thermodynamics. This is why every biologic protein that harbors a transition metal acts like a Maxwell Demon. It is also why they are highly conserved across many species in their RNA and DNA codes.

Transition metals and their compounds function as catalysts either due to their ability to change oxidation states or to form temporary absorption of reactants on their surface and activate them in the process. This is very important action when one considers what happens on the complex surface of DNA and RNA.

DNA and RNA expression is altered by adding or extracting energy and entropy around the double helix structure of the protein to alter its structure. Entropy means randomness or chaos. A transition metal acts to limit physico-chemical

randomness and increase energy because of their ability to delocalize their electrons. This massively stabilizes quantum reactions when electromagnetic forces are applied to DNA and RNA. Human chromosome number 1 is the largest and most complex molecule in the known universe. If the structure of this chromosome is more open, then gene expression occurs. If it is more closed down by the binding of methyl groups of histones the gene wont be expressed. This is how epigenetics acts in all life. Anything that acts an HDAC inhibitor in our cells, blocks mTOR signaling by increasing the process of autophagy. **A ketogenic diet steeped in iodine, and linked to water consumption has the exact same biologic effect.** Sleep has the exact same effect. Autophagy occurs maximally in humans during sleep when we are regenerating our DC current that Dr. Becker discovered. A lack of sleep and/or the destruction of the transition metals by non-native EMF within our proteins destroy mitochondrial functioning by altering cytochromes ability to tunnel electrons in quantum fashion. This decreases the ability to make energy inside the cell, decreasing ATP production and lowering oxygen production.

When energy is lost as black box radiation, entropy has to rise according to the second law of thermodynamics. Every energy checkbook must be balanced in nature. This is why DNA codes for proteins with transition metals that act like a Maxwell demon's. This is why we find transition metals in these "molecular demons." **They are designed to optimally catch a photon or electron and capture its energy and give it back to the environment in its ground state without much entropy or energy consequence**. When there is red ink, a biologic toll is paid. If the energy is not restored to the system, entropy rises, eventually causes telomere shortening causing diseases like autoimmunity, diseases of aging, cancer, and sarcopenia to appear more rapidly. This is precisely what we are currently seeing in our world today.

Huge Point to NEVER Forget: Our tissues are a system of

excitable media we call cells. Our cells are quantized, and are therefore, excitable and poised to respond specifically and disproportionately to weak low frequency electromagnetic signals from the environment. Moreover, because large amounts of energy are stored everywhere in our tissues automatically, this acts to amplify and rectify the weak electromagnetic signals that Dr. Robert O. Becker found in the 1960's into the macroscopic actions we all see in life today. Sleep and vision are the greatest example of a macroscopic quantum events we all experience daily.

Copper

Copper is an essential trace element that is required for plant, animal and human health. It is also required for the normal functioning of aerobic (oxygen-requiring) microorganisms. The gut microbiota does not need copper to survive or thrive. This becomes important when we consider the gut microbiota in an altered field.

Copper contains many D shell electrons that are highly energized and easily delocalized and unusual even in its ground state. They allow this metal to have many unique physical characteristics, molecular actions and quantum abilities. It appears that copper is a unique metal that can make proteins turn into the ultimate Maxwell Demon.

Copper is incorporated into a variety of proteins and metalloenzymes which perform essential metabolic functions; the micronutrient is necessary for the proper growth, development, and maintenance of bone, connective tissue, brain, heart and many other body organs. Copper is involved in the formation of red blood cells, the absorption and utilization of iron, the metabolism of cholesterol and glucose, and the synthesis and release of life-sustaining proteins and enzymes. These enzymes in turn produce cellular energy and regulate nerve transmission, blood clotting and

oxygen transport.

Copper also stimulates the immune system to fight infections, to repair injured tissues and to promote regenerative healing in bone. “Too much” adaptive immune activity leads to autoimmunity. “Too much” innate immune activity leads to auto-inflammation. Autoimmune diseases are abnormalities of the adaptive immune system, auto-inflammatory diseases are abnormalities of innate immunity. Non-native EMF is precisely what alters this primordial balance at the MHC1 gene. MHC class 1 and II molecules selectively induces IL-1 beta over IL-1 receptor antagonist gene expression. IL-1 signaling is naturally kept in balance by IL-1 receptor antagonist. When this system is overwhelmed by non-native EMF, the disturbance leads to inflammation in quantized cells. When homeostasis between IL-1 and IL-1RA is upset, it leads to inflammation and auto immune diseases. It creates something called an inflammasome.

Many aspects of copper homeostasis are known at the molecular level already, but no one has studied what happens to Cu+1(cuprous) and Cu+2 (cupric) ions used in biology when they are exposed to non-native EMF’s. This is how the copper ion is quantize by the photoelectric effect and electromagnetic forces. Dr. Robert O. Becker has been the only researcher I know who did specifically look at copper ions, when he studied bone and found that copper was the **doping ion** used between the negative and positive semiconductor in bone to keep calcium apatite bound to the collagen matrix. **Copper is also used in all immune cells for signal activation.** In bone, when non-native EMFs are present, copper is removed from the “doping pit” and osteoporosis is the result. This is how cosmonauts and astronauts get osteoporosis. It is also the fastest growing cause of osteoporosis today in medical practice. No one seems to know this. This is why Wolff’’s law is null and void today for bone physiology.

Copper’s essentiality is due to its ability to act as an

electron donor or acceptor as its oxidation state fluxes between Cu+1(cuprous) and Cu+2 (cupric) states. As a component of about a dozen cuproenzymes, copper is involved in key redox (i.e., oxidation-reduction) reactions in essential metabolic processes such as mitochondrial respiration, synthesis of melanin and cross-linking of collagen. Collagen is the major protein in our body. This is why animals with higher EMF exposures tend to have skin cancers like melanoma and degenerative arthritis in axial joints of the body and the spine in particular. I believe this played a role in why I really tore my knee meniscus eight years ago. It was not my obesity. My obesity was also due to the quantized changes in transition metals in my proteins of the leptin recetor to cause alterations in the ability to sense energy balance.

The adult human contains approximately 100 mg of copper, the balance of this metal being maintained entirely by gastrointestinal absorption and biliary excretion. The average daily Western diet contains 4-6 mg of copper, about 40% of which is absorbed with an equivalent amount returned to the gastrointestinal tract from the bile. The Epi-Paleo Rx provides a more optimal balance of lowered inflammation to dietary copper for the altered fields we see today. As I said earlier, the Epi-Paleo Rx is a potent blocker of the mTOR pathway as well to maintain our fountain of wellness.

Copper is absorbed from the stomach and duodenum and rapidly extracted from the portal circulation by the liver in first-pass kinetics. It was believed in years past that dietary habits had little influence on the amount of copper absorbed, because this process varies little among individuals. This may have been true 63 years ago, but it no longer can be considered true in our altered field of 2013. Today, biology and her researchers have lost this connection. What was true when their “definitive studies” were completed years ago still remain constant. They are not.

Association doesn’t entail causality. No two things could be

more associated than night or day, yet no one believes that they cause one another.

Iron

Iron is similarly required in numerous essential proteins, such as the heme-containing proteins, electron transport chain and microsomal electron transport proteins, and iron-sulfur proteins and enzymes such as ribonucleotide reductase, prolyl hydroxylase phenylalanine hydroxylase, tyrosine hydroxylase and aconitase.

The biologic essentiality of iron and copper resides in their capacity **to participate in one-electron exchange reactions.** Other metals, like aluminum and zinc, play similar roles as cofactors in lipid metabolism in the brain. The same property that makes them biologically essential, also allows them to generate free radicals that can be seriously deleterious to cells. You might be shocked to find out that anterior motor neurons in the human spinal cord are naturally loaded with both iron and copper. Familial ALS cases accounts for 5-10% of total ALS cases. Of familial ALS cases, 20% are associated with a mutation of the SOD 1 gene (21q) for cytosolic copper/zinc superoxide dismutase, which plays a role in free radical homeostasis in these neurons.

Free radicals have been identified as an important mechanism of cell damage and death in neurons of all neuro-degenerative diseases. 50 different SOD 1 mutations have been identified in different familial pedigrees. Familial ALS is inherited in an autosomal dominant fashion, therefore only one parent need carry the gene in order to pass on the disease to their children. Since various cuproenzymes (SOD1, CCO, ceruloplasmin and PAM), as well as copper transporters and chaperones (ATP7A, ATP7B, ATOX1, CCS and COX11), are expressed in spinal cord, normal motor neuron function clearly seems to require copper. The discovery of ATP7A-related distal motor

neuropathy, combined with case reports of peripheral neuropathy involving transient disturbances of copper metabolism, confirmed the importance of copper in these motor neuron cells.

Progressive cognitive impairments are characteristic in the dementia of Alzheimer disease and Parkinson’s disease. An increased concentration of copper in cerebrospinal fluid with normal plasma copper concentrations has been noted in some patients with Alzheimer and Parkinson’s disease. The increase in CSF copper is likely due to its liberation from the copper proteins in the body after it has absorbed the non-native EMF the cell is exposed too. Thus, these seemingly paradoxical properties of iron and copper demand a concerted regulation of cellular copper and iron levels in cells. This regulation system becomes useless in an environment with a varying electromagnetic field, because these ions naturally absorb EMF as part of their atomic physics. We need to pay attention to the quantized effects but we have not to date.

Transgenerational Epigenetic Effects Tied to the Autism Spectrum

There are many other clues and paths to autism we will look at as the series develops, but in the next few paragraphs you will learn precisely how epigenetics is altered in neurons in the human brain.

A mother’s diagnosis of asthma or allergies during the second trimester of pregnancy onward increases her child’s risk of autism. So does metabolic syndrome, a disorder associated with insulin resistance, obesity and, crucially, low-grade inflammation from any cause. The theme, if you’re paying attention, is any maternal immune dysregulation associated with inflammation puts her unborn child at risk for all these disorders on the autistic spectrum. I believe it can happen with daddy too. But why I believe that would require a series

in itself. Earlier this year, scientists presented direct evidence of this prenatal maternal imbalance. Amniotic fluid collected from Danish newborns, who later developed autism, looked mildly inflamed when carefully studied. At this point I think you'd be wise to go back and re read what I wrote in Brain Gut 5 really carefully. DHA is highly anti inflammatory and is the antidote to most of these conditions of existence because of its affects on M2 macrophages.

1. If the developing brain is to form into an optimal form in a child, the things it controls are also working well. The systems inherent design implies **we become only as strong as our weakest link in this blueprint.**
2. If the brain is going to working optimally as the child develops into an adult, then it means by definition that inflammation levels are low system wide and not just in the developing brain.
3. With low levels of inflammation from any cause, leptin and all the distal hormones in the metabolic chain must remain in allostasis for energy balance, without the need for exogenous intervention. This implies that understanding hormone allostasis and function is critical to understanding how to treat these illnesses and diseases. This is a major point lacking in modern medicine disease management of these diseases.
4. Brain selective nutrients in the fetus and mother must be in constant supply to maintain optimal brain function. This means 3-5 days per week at least one meal needs to contain a food source that has access to these nutrients. This is precisely how epigenetic switches are altered when the field is suboptimal for any reason. Think levee one from the Quilt.

Epigenetic Truth Bomb: They ey to understanding epigenetics switch modification is understanding how DNA/RNA is electrified or magnetized properly in our environment. Nucleic acids are proteins surrounded by polar side chains that allow

for hydrogen bonding to water. This means they can both adsorb or donate electrons depending upon the environment they are in. Adsorbtion does not mean absorption. Water binds to these areas, and acts as a magnetic dipole in the reverse water micelle and cause cells to act in concert together. This is how life acts as a collective phenomena. The size and density of the water layer directly correlates with the current present to activate gene transcription by the action of DNA methylation and histone deacetylation. DNA and RNA de-modulate environmental EMF to decode the genetic code and alter it based upon the energy frequencies present. The level of energy in to the system is the key to what will be expresses or denied based upon DNA methylation and histone deacetylation patterns. This is precisely how spectroscopy works as well in physics. The light emitted tells you about the structure it comes from. This directly affects epigenetic imprinting.

What controls the water binding sites on DNA? The methylation and acetylation of the DNA and RNA, is the answer. These chemical processes, open or close DNA to the water binding sites along the helix structure. If there is not enough water bound to overcome and energy of activation of the DNA enzymes that decode our genome the gene product is not made. Energy is what determines what epigenetic modifications are done and at what time in embryology and morphogenesis. What electrifies or magnetizes these water superconductors? The electric field and/or the magnetic field currents in our body, generated by our brain or syncytium of cells along with the native electromagnetic field that the organism lives in. This comes from the SQUID in our brain. What ever the quantum brain deciphers from its “**quantized demon receptors**” who are designed to catch photons or electrons, is the message of the environment is what determines our conditions of existence. This implies that the photoelectric effect and electromagnetic radiations contain energy and information from our world that our brain collects and decodes into our reality.

Summary

As inflammation rises for any reason at all, the electromagnetic field becomes altered. Let us think back to iron and copper physical chemistry now. Co factor metal ions and transition-metal ions such as iron and copper donate or accept free electrons via intracellular reactions and help in creating free radicals. Hydroxyl radical generation in the brain is the most important one for you to remember if you understand epigenetics. This is the one in neurons that has a very special epigenetic molecular mechanism. When a hydroxyl radical reacts and binds to methylated DNA in neurons it cause a conformational shape change **that silences the silencer of the genome.** This happens at methylated cytosine bases on DNA. Methylated cytosine residues are chemically changed to becomes 5- hydroxymethylcytosine.

This one small molecular change in DNA changes the rotational binding in certain regions of DNA, just like a photon changes a rotational bond in our retina. This molecule has atoms in it that become delocalized and the energy from this electromagnetic signal decreases energy to the back bone of DNA and increases entropy. This quantized effect alters the information delivered to the epigenetic protein MeCP2 in autism. When MeCP2 is altered by quantized energy the result is molecular autism. MeCP2 can no longer bind to the modified DNA permanently. The neuron's epigenetic enzymes then mistakenly read the DNA as being un-methylated instead of being methylated.

This ruins signaling in the developing hindbrain and neocortex, and the result is an autism spectrum disorder. This is how neuro-immune diseases occur, in my humble opinion. Information in subatomic particles are collected by "molecular demons" to alter information delivered to our genome to change expression.

This is how non-native EMF's directly alters DNA methylation patterns in neurons in humans. Most epigenetic molecular biologist are puzzled by this set of circumstances because they do not understand how subatomic particles work in nature. Physics does. Quantum physics dictates all biologic action. Another thing that perplexes them is since neurons are terminally differentiated cells, "they believe" they should be immune to these kind of modifications. The reason, "they believe," this is because neurons never again copy their DNA once they are formed in the brain. As a result, "they believe" neurons can not lose their DNA methylation levels because they never divide again. **Remember, DNA methylation normally reduces gene expression in humans**. This is well-established in the literature.

Well, if EMF can chemically generate a hydroxyl radical via the Fenton reactions, as I mentioned to you above, you might see how DNA expression is altered easily in a young forming brain when a transition metal ion absorbs any excessive non-native EMF. It never ever has to divide again to express the disease. It loses its natural function in the brain. This action is akin to what happens in sickle RBC cells in sickle cell anemia. This is what happens in all neuro-immune diseases. If you do not have "quantized lenses" you can never see this molecular world of action.

The key reasons these biologists have missed these affects is two-fold, in my view:

1. The Fenton reaction likely occurs in glial cells and not in neurons. Why? This is where the iron and copper are located in the CNS and glia cells are known to metabolically support neuron function. This is also where most brain tumors come from as well. And we know that these cells control the BBB, and that EMF has been associated with making brain tumors and causing the BBB to leak in Allan Frey's studies with methylene blue. Fenton reactions all reduce levels of melatonin.

Melatonin is the major antioxidant in the brain. Melatonin also protects the brain by stimulating glutathione peroxidase in all neurons. Glutathione peroxidase converts reduced glutathione to its oxidized form and in doing so converts hydrogen peroxide from H2O2 to H2o (water). The generation of water is what stops the generation of dangerous hydroxyl radicals in its tracks chemically. This immediately prevents cell degeneration and cell death in neurons. The generation of water from H2O2 reverses dehydration caused by this mechanism of action. This is why ligaments and discs degenerate faster in an non-native EMF modern world. This is how I tore my meniscus, in case you were wondering.

2. Since the hydroxyl radical changes the shape of the cytosine residue, instead of actually demethylating DNA, as has been reported in most of the studies done to date in neurons, that maybe neurons/glia are really converting 5-methylcytosine to 5- hydroxymethylcytosine. This action blinds the chemical recognition of the enzymes to read the methylation pattern correctly.

Researchers' current techniques for measuring both types of cytosine residues are not currently sensitive enough to tell one from the other. This means that every paper written to date has always referred to "decreased methylation patter,n" but may have actually measuring the effect of 5-hydroxymethylcytosine without ever knowing it! Now you do.

My bet is this is why they will remain clueless for many more years, and kids will continue getting autism, ADHD, schizophrenia and depression in record numbers. This is also why neuro-degeneration is exploding and won't be solved by medicine, in my humble opinion. The do not have a guiding theory of how a quantized cell works, because they ignored Gilbert Ling's work on cell physiology in the 1950s. So, I believe, there is no way they will understand what I have put

forth here. Most in the blogosphere will mock it, because they just do not understand quantum actions at a molecular level. This was why I asked that fateful question to an organic chemist in 2011 at AHS. They do not understand the quantum physics of the transition metals, and how electromagnetic radiation delivers and subtracts both energy, information, and entropy to DNA and RNA. These mechanisms are the exact epigenetic mechanisms that form a human brain and an adult immune system we talked about in EE 7. So far to date, no published literature has explained the mechanism of any of these diseases that I just explained to you above. Why? Because quantum physics rarely mixes with biology in the real world of PEER reviewed literature.

Remember, most intracellular iron is in ferrous (+2 ion) form, superoxide ions can convert it to the ferric (+3) form to take part in Fenton reaction. Since superoxide ions and transition metals act in a synergistic manner in the creation of free radical damage, **Iron supplementation should rarely be done in patients with any active infections or in general any diseases.** Rarely do patients ever get told this, because few people understand how quantum physics dictates how biology operates. Physicists are now in unanimous agreement that quantum mechanics explains all observable actions in nature. When we are inflamed and leptin resistant, taking supplemental iron or copper is a really bad idea for your quantum brain. If you do, and you are young, you are at risk for getting one set of neuro immune diseases mentioned above, like ADHD or schizophrenia. If you're in mid-life, you get others like ALS, and if you're old you get neuro-degeneration diseases like Alzheimer's Disease.

Now think about all those diet aficionados telling you what to eat now. Do you still think they have thought all this through thoroughly yet? Do you honestly think any of them have a clue about how an 'altered electromagnetic field' may cause you to change what your idea of what the optimal diet might be? **What**

Cordain has found is valuable to us in a sense, but his findings no longer match the environment you face today. They were great 70,000 years ago, and they are far better today than the standard western diet. Today's environment is stealing more energy from you and creating more entropy in your tissues, than at any other time of human history. That might suggest to you that what is now optimal has also frame-shifted, no? If it does not, then ask yourself where did all these new diseases spring from?

When the field is altered for any reason at all, the result is molecular chaos around DNA and RNA of all kinds. Epigenetics is controlled by ncRNA fragments made from retrotransposons you heard about in Brain gut 2. They must be activated properly to work by non-native EMF. When this does not happen, DNA and RNA can not be translated well or properly. Molecular chaos is a synonym is called molecular crowding which is a synonym for inflammation. The easiest way to cause intracellular crowding is water dehydration. This effect is tied to transitional metal quantum chemistry due to the queer affects of the D shell electrons. Non-native EMF's major effect in cells is to cause dehydration because many transition metal ions in proteins conductively absorb EMF and water is broken down. When molecular crowding is present in a cell, we call this clinical syndrome leptin resistance. In this paragraph, you have the giant circle of life laid out for you now, to fully absorb.

I discussed this entire process in a recent podcast here.

Welcome to a new understanding of autism and many other diseases. Autism is an epigenetic field defect disease, nothing more or less. It is tied to nature's three fundamental laws found in Energy and Epigenetics 4.

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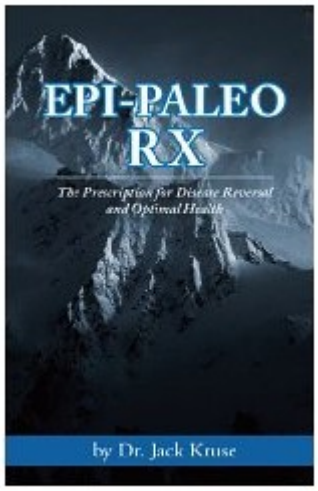	
The Epi-Paleo Prescription by Dr. Jack Kruse	Life Extension Super Omega-3 EPA/DHA with Sesame Lignans & Olive Fruit Extract

- View The Energy and Epigenetics Store

Additional Resources

- EMF series
- EMF 2: Einstein, Meet Leptin
- Quantum Biology series
- The Quilt Levee 1: Cellular Homeostasis
- Hormone Cascade 101
- Hormones 102
- Brain Gut 2: Viral Marketing
- Brain Gut 5: Paradigm Drifts, Paradigm Shifts – Epi-Paleo
- Energy and Epigenetics 4: Light, Water, Magnetism
- Energy and Epigenetics 5: The Quantum Brain
- Energy and Epigenetics 7: The Epigenetic Toolbox
- Can’t Remember? Is Your Protein Bent?
- To B Or Not to B … Or Is It Protein?
- Do Food Electrons Impart a Quantum Effect?

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